

PATENT

PORTABLE ORGANIZER WITH MULTIPLE STORAGE TRAYS

Field of the Invention

The present invention relates to a parts organizer and more particularly to a portable universal organizer for enabling a user such as a mechanic to organize and temporarily store parts of a vehicle component such as bolts, nuts, washers, etc. resulting from the disassembly of vehicle component, a transmission, engine, brake unit etc.

Background of the Invention

During the disassembly of a vehicle component such as a brake unit, transmission, engine, etc. mechanics typically place the small disassembled parts, such as bolts, nuts, cotter pins, lock washers, snap washers, set screws etc. on a work bench, nearby floor space, in pans or other containers. Such a procedure, while perhaps expedient from the standpoint of the disassembly procedure can turn into a time consuming and even expensive process where essential parts are misplaced or lost. Various types of organizers and storage containers have been suggested in the prior art.

See, for example, U.S. Patent No. US/2002/0040880A1 (“’880 publication”) which discloses an organizer in which a plurality of bins with an open front are pivotally mounted in a housing for simultaneous rotation between an open and closed position by means of a strap or bar (5). While the ’880 publication would aid a user in placing and keeping the removed parts in specific bins, it suffers from several disadvantages. The individual bins cannot be removed from and reinstalled in the housing. Thus, a user, such as a mechanic, could not take one of the bins and position it adjacent the site where the disassembly process is taking place. For example, a mechanic may be positioned under a vehicle or over the engine compartment while removing a particular assembly or component. It would be advantageous for the mechanic to be able to place the dismantled parts into one or more separate containers located close to the working area and then be able to access the container(s) at

1 a later time when the component is to be reassembled. In addition, the items in the bins of the '880
2 publication are not readily viewable when the bins are in the closed position.

3 U.S. Patent No. 5,458,409 ("409 patent") like the '880 publication discloses a storage
4 container with drawers which are arranged to pivot in unison from an open to a closed position. The
5 drawers are not removable and in the closed position would not allow a user to see the contents in
6 the drawer. In addition, it does not appear that the container would be readily moved from one
7 location to another. Also see U.S. Patent Nos. 4,616,891 and 4,822,119 for similar types of storage
8 compartments.

9 U.S. Patent No. 3,942,851 ("851 patent") discloses a storage bin assembly in which
10 individual bins are pivoted on a rod so that the bins are oriented horizontally when empty and
11 oriented at angle to the horizontal when supporting articles. While the bins can be lifted off their
12 respective support rods they are not arranged to pivot in unison and permit the contents to be viewed
13 only when the individual bins are tipped downwardly.

14 Conventional storage cabinets are designed to contain loose items of different types such as
15 tools, spare parts and the like. While objects according to type may be stored in individual
16 compartments it may require a considerable time to search through the many compartments to find
17 the particular item(s) the searcher is looking for. In addition, the housing for such compartments are
18 generally not readily portable, and where portable, such as a mechanics tool cabinet, the individual
19 drawers are not readily removable.

20 There is a need for a more user friendly organizer which will enable a user such as a
21 mechanic to temporarily store small parts removed during the disassembly of an apparatus and
22 readily retrieve such parts during the reassembly process.

23 Summary of the Invention

24 A generally rectangular frame member having opposing side walls, a top, base, front and rear,
25 houses a plurality of generally U-shaped tray members. Each tray member has an open top lying in
26 a plane and is releasably mounted to the side walls of the tray so that the tray members are arranged
27 in a vertical arrangement for rotation between a deployed position in which the plane of the open
28 tops are generally parallel to the frame front and a retracted position in which the planes of the open
29 tops extend at an acute angle to the frame front, for example, at an angle within the range of 15° to

1 65° and most preferably about 25° to 45° to the horizontal. A gang bar, slidably mounted on the
2 frame, is coupled to the individual tray members so that the tray members, when positioned on the
3 frame, will move in unison from the retracted to the deployed position and visa versa. The mounting
4 between the individual tray members and the coupling between the gang bar and the tray members
5 allow one or more of the tray members to be removed from the frame and placed near the site where
6 an apparatus is being disassembled and then replaced in the frame after receiving the disassembled
7 parts to be temporarily stored.

8 The frame with the trays mounted therein, which normally rests on its base in a vertical
9 position, can be laid on the floor near the disassembled site so that the tops of the trays are oriented
10 vertically to receive the disassembled parts or tilted at a small angle to the horizontal by allowing
11 a handle, pivotally mounted to the top of the frame, to support the frame top with respect to the floor.
12 The front, bottom and back walls of the trays may be made of perforated material such as metal to
13 allow the parts within a tray to be cleaned by a suitable solvent. The top of the front and back walls
14 of the trays may be rolled over to provide a rounded top edge to eliminate a sharp edge and the front
15 and back edges may include opposing spaced notches for retaining dividers in place within the trays.
16 The frame may optionally be provided with wheels attached to the base and the top may include a
17 shelf provided with spaced openings for receiving spark plugs and the like.

18 The present invention, both as to its construction and operation, may best be understood by
19 reference to the following description taken in conjunction with the accompanying drawings.

20 Brief Description of the Drawings

21 Fig. 1 is a perspective view of a portable organizer in accordance with the present invention
22 with the trays in the retracted position and one of the trays removed and positioned in front;

23 Fig. 2 is a side view of the organizer with the trays in the deployed position and without the
24 can holder;

25 Fig. 3 is a front view of the organizer of Fig. 2;

26 Fig. 4 is a side view of the organizer with the trays in the retracted position;

27 Fig. 5 is a front view of the organizer of Fig. 4;

28 Fig. 6 is a back view of the organizer of Fig. 2 with the trays removed showing the gang bar
29 member for controlling the rotation of the trays, the collapsible handle arrangement and J hooks for

enabling the organizer to be supported on a cart, etc.;

Fig. 7 is a side view of the organizer in a reclined position on a floor with the top of the frame supported on the floor by the handle and without the trays installed therein;

Fig. 8 is a side view of the organizer of Fig. 7 laying on the floor;

Fig. 9 is a top plan view of a tray with two dividers inserted therein;

Fig. 10 is an end view of a divider; and

Fig. 11 is a perspective view of a tray made of perforated material with two dividers inserted therein.

Description of the Preferred Embodiment

Referring now to the drawings and particularly to Figs. 1-6, an organizer in accordance with the present invention includes a frame 10 which supports a plurality of trays 42. The frame has lateral side walls 12 secured between support rods 14 and 16 with the rods 14. The forward rods 16 extend rearwardly at the top along section 14a then upwardly along section 14b and thence are joined together via top horizontal rod 15. The lower ends of the rods 14 are slanted forwardly along section 14c and then rearwardly along base section 14d to form a bracket to support axles 18a of wheels 18. The bracket includes an upper section 14e which is joined to the rod 16 as shown. A lower horizontal rod 20 extends between sections 14d to form, along with sections 14d, the base of the frame as is shown in Fig. 6. Additional rear support rods 22 extend vertically from the rod 20 to the top rod 15. A top shelf 24 is secured to and supported by the rod sections 14a and the rod 15 as shown. The slanted portion 24a of the shelf 24 is provided with openings or apertures 24b for receiving and supporting spark plugs and the like. The horizontal section 24c of the shelf may be used to support tools or miscellaneous items.

Vertically extending rear rods 26a and 26b are joined to the top and bottom rods 15 and 20, respectively, to form the rear of the frame. The outer rods 26a support two top and bottom J-hooks 28 to enable the frame to be supported on the side of a cart such as a mechanics wheeled cart or a work bench. Horizontally oriented J-shaped handle supports 30 are secured to the upper ends of the rods 26b with their inwardly extending lower stubs 30a arranged to pivotally mount a foldable rectangular handle bar 32 via eyelets on the lower end of the bar 32. The handle 32 is held in an upright position via the inwardly extending upper stubs 36b as is shown in Fig. 6. The lower ends

1 of the handle can be squeezed together to clear the inner surface of the stubs 30b and allow the
2 handle to drop down. The handle may then be rotated to engage the outer surface of the stubs 30b
3 to support the frame at an inclined position relative to a floor 37 as is illustrated in Fig. 7.
4 Alternatively, the frame may be laid on the floor as is shown in Fig. 8.

5 A gang bar or rod 34 is slidably mounted to the central rear portion of the frame via a guide
6 collar 36 secured to the rod 15 and blind bore in a post 38 secured to the base rod 20 as is shown in
7 Fig. 6. The gang bar, pictured at rest in Fig. 7 (retracted position), is arranged to slide upwardly until
8 a stop collar 34a (carried by the bar) engages the guide collar 36 (deployed position). Actuating pins
9 34b are secured to and extend horizontally inwardly from the gang bar. The actuating pins are
10 arranged to project through cooperating openings or holes in individual trays releasably carried by
11 the frame as will be described.

12 An adjustable can or cup holder 40 is secured to the rods 14 and 16 on one side of the frame
13 via a plate 40a. The holder 40 includes a base 40b supporting a divider 40c and an adjustable
14 peripheral wall 40d for accommodating different sized cans or containers.

15 The trays 42 are releasably mounted in the frame via pivot pins or studs 42a which extend
16 outwardly from opposed end walls 42b. The pivot pins 42a ride in recesses 12a at the terminal ends
17 of inclined channels or slots 12b in the frame side walls 12. Referring now to Figs 1, 9 and 10, each
18 tray is formed with a front wall 42c, a back wall 42d, bottom wall 42e and an opening 42f in the
19 center of the bottom wall adjacent the back wall as shown. The junction 42g between the front and
20 bottom walls is preferably rounded as is shown in Figs. 1 and 11 to aid a user in the retrieval of parts
21 disposed in the tray. The junction of the bottom and back walls preferably form about a 90° angle.
22 The openings 42f receive the actuating pins 34b. The upper or free edge of the front, back and end
23 walls of the tray form an open top of the tray, the perimeter of which lies in a plane that is generally
24 parallel to the front of the frame when the trays are in the deployed position as is illustrated in Figs.
25 1-3. The trays pivot relative to the recesses 12a about an imaginary axis extending through the pivot
26 pins 42a when mounted in the frame through an angle Θ , with respect to the vertical as illustrated
27 in Fig. 4 from a deployed position ($\Theta \cong 0^\circ$) to a retracted position ($\Theta \cong 15^\circ$ to 65°). In the retracted
28 position Θ preferably equals about 25° to 45° . The trays pivot in unison as a result of the pin
29 34b/opening 42f coupling between the gang bar and the trays. The center of gravity of the unloaded

1 trays extends slightly below the imaginary pivot axis. As a result when the organizer is raised from
2 a reclined position, such as that shown in Fig. 7 (or flat position Fig. 8), to vertical position, such as
3 that shown in Fig. 1, the trays will automatically rotate to their retracted position unless a set screw
4 36a, carried by guide collar 36, is tightened to prevent movement of the gang bar 34.

5 The trays may be made of any suitable material, but preferably are made of sheet metal such
6 as steel. While the front, bottom and back walls may be solid as shown in Fig. 1 they are preferably
7 perforated as is illustrated in Fig. 11. The perforations allow parts contained in the tray to be cleaned
8 with a suitable solvent by either dipping the trays in the solvent container or by pouring solvent onto
9 the parts in the tray and allowing the solvent to drain through the holes to a recovery vessel. The
10 trays after being constructed are preferably provided with a yellow zinc coating in a conventional
11 manner for rust and solvent resistance purposes. It should be noted that the bottom walls of the trays
12 may be provided with a magnetic plate 42h (solid or perforated) as is illustrated in Fig. 8 to retain
13 steel or ferrous alloy parts therein.

14 The upper (free) edges of the front and back walls of the trays are preferably rolled over in
15 the form of an inverted U to provide a rounded edge. The top edge is also preferably notched at
16 opposed locations 42i along the sides to receive the laterally extending shoulders 44a notched at 44b
17 at the top of divider 44. The notches 42i and the slotted divider shoulders securely retain the channel
18 free dividers in place to provide separate compartments within each tray as is illustrated in Fig. 11.
19 The use of edge notches to secure the dividers in place leaves the inside of the tray free of
20 obstructions.

21 The frame, with the trays therein in their deployed position, can be laid on a floor or other
22 surface or inclined with respect thereto (Figs. 7 and 8) near the disassembly area to facilitate the
23 placement of parts in the trays. Alternatively, one or more of the trays 42 can be removed from the
24 frame by disengaging the pivot pins and the openings 42f from the channels 12b and actuating pins
25 34b respectively. Once the trays are removed they can be placed adjacent the disassembly site to
26 facilitate the placement of parts therein. The trays can then be replaced in the frame and accessed
27 later when the parts are needed.

28 It is to be noted that in an alternative construction of a releasable mounting between the trays
29 and the frame the pivot pins could protrude from the frame side walls and slide into inclined

1 channels formed in the trays. In addition, the construction of the coupling between the gang bar and
2 the individual trays could be reversed with actuating pins carried by the trays extending into
3 openings in the gang bar.

4 By way of example only, the frame can be about 48" in height, 17" in width with a distance
5 of about 15 1/4" between the side walls. The individual trays can be about 15" long, 3" wide and 3"
6 deep.

7 There has thus been described a novel and user friendly parts organizer. Modifications and
8 improvements to the organizer may occur to those skilled in the art without involving any departure
9 from the spirit and scope of the invention as called for in the appended claims.
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